WHAT IS CLAIMED IS:

1. A method for producing a mixture of a nucleic acids, said method comprising:

(a) providing an array of distinct single-stranded probe nucleic acids of differing sequence where each distinct probe present on said array comprises a constant domain and a complement variable domain;

(b) contacting said array of single-stranded probe nucleic acids with nucleic acids complementary to said constant domain under hybridization conditions, whereby a template array of overhang comprising duplex nucleic acids is produced, wherein each overhang comprising duplex nucleic acid of said array comprises a double-stranded constant region and a single-stranded variable region overhang; and

(c) subjecting said template array of overhang comprising duplex nucleic acids to primer extension reaction conditions under conditions sufficient to produce said mixture of nucleic acids;

whereby said mixture of nucleic acids is produced.

2. The method according to Claim 1, wherein said mixture of nucleic acids is a mixture of deoxyribo-oligonucleotides.

3. The method according to Claim 1, wherein said constant domain comprises at least one domain selected from the group consisting of: a linker domain; a functional domain; and a recognition domain.

4. The method according to Claim 1, wherein said step (c) comprises a protocol selected from the group consisting of: linear PCR; strand displacement amplification; and *in vitro* transcription.

5. A method for producing a mixture of a plurality of distinct deoxyribo-oligonucleotides of differing sequence, wherein each distinct constituent oligonucleotide of said plurality comprises a different variable domain V, said method comprising:

(a) providing an array of a plurality of surface immobilized distinct single-stranded probes, wherein each distinct surface immobilized single-stranded probe present on said array is described by the formula:

surface-L-R-F-cV-5'

wherein:

L is an optional linking domain;

R is a recognition domain;

F is a functional domain; and

cV is a complement domain having a sequence that hybridizes under stringent conditions to a variable domain of one of said distinct oligonucleotides of said plurality;

(b) contacting said array of a plurality of surface immobilized distinct single-stranded probes under hybridization conditions with a population of nucleic acids of the formula:

5′-cR-cF-3'

wherein:

cR is the complement of R; and

cF is the complement of F;

whereby a template array of overhang comprising duplex nucleic acids is produced, wherein each overhang comprising duplex nucleic acid of said array is described by the formula:

surface-L-R-F-cV-5'

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5′-cR-cF-3'; and

(c) subjecting said template array of overhang comprising duplex nucleic acids to primer extension reaction conditions;

whereby said mixture of a plurality of distinct oligonucleotides of differing sequence, wherein each distinct constituent of said plurality comprises a different variable domain V, is produced.

6. The method according to Claim 5, wherein said linker domain ranges in length from about 0 to 10 bases.

7. The method according to Claim 5, wherein said functional domain is an RNA polymerase promoter domain.

8. The method according to Claim 5, wherein said recognition domain is a recognized by a restriction endonuclease.

9. The method according to Claim 5, wherein said step (c) comprises a protocol selected from the group consisting of: linear PCR; strand displacement amplification; and in vitro transcription.

10. A method of making a population of target nucleic acids from an initial mRNA sample, said method comprising:

(a) generating a mixture of nucleic acids according to the method of Claim 1; and

(b) employing said mixture of nucleic acids as primers in a target generation step in which target nucleic acids are produced from said mRNA sample;

whereby said population of target nucleic acids is produced.

11. The method according to Claim 10, wherein said target generation step (b) comprises a template driven primer extension reaction.

12. The method according to Claim 10, wherein said target generation step (b) produces labeled target nucleic acids.

13. A hybridization assay comprising the steps of:

(a) generating a set of target nucleic acids according to the method of Claim 10;

(b) contacting said set of target nucleic acids with an array of probe nucleic acids under hybridization conditions; and

(c) detecting the presence of target nucleic acids hybridized to probe nucleic acids of said array.

14. The assay according to Claim 1, wherein said target nucleic acids are labeled.

15. The assay according to Claim 1, wherein said assay further comprises washing unbound target away from the surface of said array.

16. An array comprising a plurality of distinct single-stranded probe nucleic acids immobilized on a surface of substrate, wherein each of said single-stranded probe nucleic acids is described by the formula:

surface-L-R-F-cV-5'

wherein:

L is an optional linking domain;

R is a recognition domain;

F is a functional domain; and

V is a variable domain;

wherein only said variable domain V is different for each distinct single-stranded probe nucleic acid of said array.

17. The method according to Claim 16, wherein said functional domain is an RNA polymerase promoter domain.

18. The method according to Claim 16, wherein said recognition domain is recognized by a restriction endonuclease.

19. The method according to Claim 16, wherein L ranges in length from about 0 to 10 bases.

20. A kit for use in the method of Claim 1, said kit comprising:

(a) universal primer; and

(b) an array of probe nucleic acids or a means for producing the same.